

IN THE CLAIMS:

1 1. (Currently Amended) A system configured to simplify management of a clustered stor-
2 age system having a plurality of failover modes, the system comprising:

3 a user interface system that allows a user to define a plurality of failover modes in
4 ~~a~~ the clustered storage system, wherein each failover mode automatically configures one
5 or more ports on a selected storage system or a partner storage system in response to a
6 failover condition, wherein the partner storage system is configured to receive requests
7 directed to the partner storage system and the selected storage system, each failover mode
8 further configuring the partner storage system with a world wide node name and a world
9 wide port name from the selected storage system to allow the partner storage system to
10 assume the identity of the selected storage system; and

11 a command set implemented by the user interface system, the command set in-
12 cluding a first command and a second command,

13 the first command configured to permit the user to specify a specific initia-
14 tor group (igroup) to utilize one or more ports for data access proxying in the
15 clustered storage system wherein the igroup is a logical named entity assigned to
16 one or more addresses that are associated with one or more initiators,

17 the second command configured to set a cluster mode, the cluster mode
18 including at least one of the plurality of failover modes in which a storage ~~systems~~
19 system is to operate,

20 wherein the command set further provides information specific to the
21 failover operations of the one or more ports to the user on the user interface sys-
22 tem.

1 2. (Previously Presented) The system of claim 1 wherein the user interface system com-
2 prises a command line interface (CLI) configured to support the command set.

1 3. (Original) The system of claim 1 wherein the command set further comprises an igroup
2 command that determines whether a set of initiators may utilize data access command
3 proxying.

1 4. (Original) The system of claim 3 wherein the set of initiators comprises at least one
2 fibre channel world wide name.

1 5. (Original) The system of claim 3 wherein the set of initiators comprises one or more
2 iSCSI identifiers.

1 6. (Original) The system of claim 3 wherein the igroup command sets an igroup option to
2 determine whether members of a set of initiators may use a partner port for proxying data
3 access command.

1 7. (Original) The system of claim 3 wherein the command set further comprises a cfmode
2 command that sets a cluster mode for the clustered storage system.

1 8. (Original) The system of claim 7 wherein the cluster mode enables the clustered stor-
2 age system to proxy data access requests received by a first storage system in the clus-
3 tered storage system to a second storage system in the clustered storage system.

1 9. (Original) The system of claim 7 wherein the cluster mode enables a first storage sys-
2 tem in the clustered storage system to assume an identity of a second storage system in
3 the clustered storage system.

1 10. (Original) The system of claim 7 wherein the cluster mode enables proxying of data
2 access requests received by a first storage system in the clustered storage system to a sec-
3 ond storage system in the clustered storage system and further enables the first storage
4 system to assume an identity of the second storage system.

1 11. (Original) The system of claim 1 wherein the command for setting a cluster mode
2 comprises a cfmode command.

1 12. (Original) The system of claim 1 wherein the user interface system further comprises
2 a graphical user interface having functionality to implement the command set.

1 13. (Currently Amended) A method for simplifying management of a clustered storage
2 system having a plurality of failover modes, comprising:

3 providing a user interface system that allows a user to define a plurality of
4 failover modes in a clustered storage system wherein each failover mode automatically
5 configures one or more ports on a selected storage system or a partner storage system in
6 response to a failover condition, wherein the partner storage system is configured to re-
7 ceive requests directed to the partner storage system and the selected storage system, each
8 failover mode further configuring the partner storage system with a world wide node
9 name and a world wide port name from the selected storage system to allow the partner
10 storage system to assume the identity of the selected storage system; and

11 executing a command set supported by the user interface system, the command
12 set including a first command and a second command,

13 the first command configured to permit the user to specify a specific initia-
14 tor group (igroup) to utilize one or more ports for data access proxying in the
15 clustered storage system wherein the igroup is a logical named entity assigned to
16 one or more addresses that are associated with one or more initiators,

17 the second command configured to set a cluster mode for the clustered
18 storage system, the cluster mode defining one of a plurality of failover modes in
19 which a storage system is to operate,

20 wherein the command set further provides information specific to the
21 failover operations of the one or more ports to the user on the user interface sys-
22 tem, and each failover mode automatically configures one or more ports on a se-

23 lected storage system or a partner storage system in response to a failover condi-
24 tion , the partner storage system configured to receive requests directed to the
25 partner storage system and the failed storage system.

1 14. (Original) The method of claim 13 wherein the cluster mode comprises a partner
2 mode; and

3 wherein the clustered storage system is enabled to proxy data access requests re-
4 ceived by a first storage system in the clustered storage system to a second storage sys-
5 tem.

1 15. (Original) The method of claim 13 wherein the cluster mode comprises a standby
2 mode; and

3 wherein a first storage system in the clustered storage system is enabled to assume
4 an identity of a second storage system in the clustered storage system.

1 16. (Previously Presented) The method of claim 13 further comprising providing a GUI
2 implementing commands available through the user interface system.

1 17. (Previously Presented) The method of claim 13 further comprising providing a GUI
2 window for setting a cluster mode of the clustered storage system.

1 18. (Previously Presented) The method of claim 16 further comprising providing a GUI
2 window for setting a proxy option for an initiator group.

1 19. (Currently Amended) A system configured to simplify management of a clustered
2 storage system having a plurality of failover modes, the system comprising:

3 a user interface means for implementing a command line interface that allows a
4 user to define a plurality of failover modes in a clustered storage system wherein each
5 failover mode automatically configures one or more ports on a selected storage system or

6 a partner storage system in response to a failover condition, wherein the partner storage
7 system is configured to receive requests directed to the partner storage system and the
8 selected storage system, each failover mode further configuring the partner storage sys-
9 tem with a world wide node name and a world wide port name from the selected storage
10 system to allow the partner storage system to assume the identity of the selected storage
11 system; and

12 means for executing a command set, the command set including a first
13 command and a second command,

14 the first command configured to permit the user to specify a specific initia-
15 tor group (igroup) to utilize one or more ports for data access proxying in the
16 clustered storage system wherein the igroup is a logical named entity assigned to
17 one or more addresses that are associated with one or more initiators, and

18 the second command configured to set a cluster mode, the cluster mode
19 defining one of a plurality of failover modes in which a storage systems-system is
20 to operate,

21 wherein the command set further provides information specific to the
22 failover operations of the one or more ports to the user on the user interface sys-
23 tem, ~~and each failover mode automatically configures one or more ports on a se-~~
24 ~~lected storage system or a partner storage system in response to a failover condi-~~
25 ~~tion, the partner storage system is configured to receive requests directed to the~~
26 ~~partner storage system and the failed storage system.~~

1 20. (Original) The system of claim 19 further comprising means for determining whether
2 a set of initiators may utilize data access command proxying.

1 21. (Original) The system of claim 19 wherein user interface means further comprises
2 means for determining whether a set of initiators may utilize data access command
3 proxying.

1 22. (Original) The system of claim 21 wherein the set of initiators comprises at least one
2 fibre channel world wide name.

1 23. (Original) The system of claim 21 wherein the set of initiators comprises one or more
2 iSCSI identifiers.

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1 24. (Original) The system of claim 19 wherein the cluster mode enables the clustered
2 storage system to proxy data access requests received by a first storage system in the
3 clustered storage system to a second storage system in the clustered storage system.

1 25. (Original) The system of claim 19 wherein the cluster mode enables a first storage
2 system in the clustered storage system to assume an identity of a second storage system
3 in the clustered storage system.

1 26. (Original) The system of claim 19 wherein the cluster mode enables proxying of data
2 access requests received by a first storage system in the clustered storage system to a sec-
3 ond storage system in the clustered storage system and further enables the first storage
4 system to assume an identity of the second storage system.

1 27. (Currently Amended) A computer readable storage device having stored thereon pro-
2 gram instructions executing on a computer, for simplifying management of a clustered
3 storage system having a plurality of failover modes, wherein the program instructions
4 when executed by the computer perform the steps of:

5 providing a user interface system that allows a user to define a plurality of
6 failover modes in a clustered storage system,

7 wherein each failover mode automatically configures one or more ports on
8 a selected storage system or a partner storage system in response to a failover
9 condition, and

10 wherein the partner storage system is configured to receive requests di-
11 rected to the partner storage system and the selected storage system, each failover
12 mode further configuring the partner storage system with a world wide node name
13 and a world wide port name from the selected storage system to allow the partner
14 storage system to assume the identity of the selected storage system; and
15 executing a command set supported by the user interface system to set a cluster
16 mode for the clustered storage system, the command set including a first command and a
17 second command,

18 the first command configured to permit the user to specify a specific initia-
19 tor group (igroup) to utilize one or more ports for data access proxying in the
20 clustered storage system wherein the igroup is a logical named entity assigned to
21 one or more addresses that are associated with one or more initiators,

22 the second command the cluster mode defining one of a plurality of
23 failover modes in which ~~a storage system~~ a storage system is to operate,

24 wherein the command set further provides information specific to the
25 failover operations of the one or more ports to the user on the user interface sys-
26 tem, ~~and each failover mode automatically configures one or more ports on a se-~~
27 ~~lected storage system or a partner storage system in response to a failover condi-~~
28 ~~tion, the partner storage system configured to receive requests directed to the~~
29 ~~partner storage system and the failed storage system.~~

1 28. (Original) The computer readable medium of claim 27 wherein the cluster mode
2 comprises a partner mode; and

3 wherein the clustered storage system is enabled to proxy data access requests re-
4 ceived by a first storage system in the clustered storage system to a second storage sys-
5 tem.

1 29. (Original) The computer readable medium of claim 27 wherein the cluster mode
2 comprises a standby mode; and

3 wherein a first storage system in the clustered storage system is enabled to assume
4 an identity of a second storage system in the clustered storage system.

1 30. (Original) The computer readable medium of claim 27 further comprising the step of
2 providing a GUI implementing commands available through the user interface system.

1 31. (Original) The computer readable medium of claim 27 further comprising the step of
2 providing a GUI window for setting a cluster mode of the clustered storage system.

1 32. (Original) The computer readable medium of claim 27 further comprising the step of
2 providing a GUI window for setting a proxy option for an initiator group.

1 33. (Currently Amended) A system, comprising:

2 an interface that defines a plurality of failover modes for a clustered storage sys-
3 tem that allows a user to define a plurality of failover modes in a clustered storage system

4 wherein each failover mode automatically configures one or more ports on
5 a selected storage system or a partner storage system in response to a failover
6 condition, and

7 wherein the partner storage system is configured to receive requests di-
8 rected to the partner storage system and the selected storage system, each failover
9 mode further configuring the partner storage system with a world wide node name
10 and a world wide port name from the selected storage system to allow the partner
11 storage system to assume the identity of the selected storage system; and

12 a command set implemented by the interface, the command set including a first
13 command and a second command,

14 the first command configured to permit the user to specify a specific initia-
15 tor group (igroup) to utilize one or more ports for data access proxying in the
16 clustered storage system wherein the igroup is a logical named entity assigned to
17 one or more addresses that are associated with one or more initiators,

18 the second command ~~wherein the command set includes a command for~~
19 ~~setting configured to set~~ a cluster mode using one of the plurality of failover
20 modes, in which a storage ~~systems-system~~ system is to operate,
21 wherein the command set further provides information specific to the
22 failover operations of the one or more ports to the user on the user interface sys-
23 tem, ~~and each failover mode automatically configures one or more ports on a se-~~
24 ~~lected storage system or a partner storage system in response to a failover condi-~~
25 ~~tion, the partner storage system is configured to receive requests directed to the~~
26 ~~partner storage system and the failed storage system.~~

1 34. (Previously Presented) The system of claim 33, wherein the interface comprises a
2 command line interface (CLI) configured to support the command set.

1 35. (Previously Presented) The system of claim 33, wherein the command set further
2 comprises an igroup command that determines whether a set of initiators may utilize data
3 access command proxying.

1 36. (Previously Presented) The system of claim 35, wherein the set of initiators comprises
2 at least one fibre channel world wide name.

1 37. (Previously Presented) The system of claim 35, wherein the set of initiators comprises
2 one or more iSCSI identifiers.

1 38. (Previously Presented) The system of claim 35, wherein the igroup command sets an
2 igroup option to determine whether members of a set of initiators may use a partner port
3 for proxying data access command.

1 39. (Previously Presented) The system of claim 33, wherein the cluster mode enables the
2 clustered storage system to proxy data access requests received by a first storage system
3 in the clustered storage system to a second storage system in the clustered storage system.

1 40. (Previously Presented) The system of claim 33, wherein the cluster mode enables a
2 first storage system in the clustered storage system to assume an identity of a second
3 storage system in the clustered storage system.

1 41. (Previously Presented) The system of claim 33, wherein the cluster mode enables
2 proxying of data access requests received by a first storage system in the clustered stor-
3 age system to a second storage system in the clustered storage system and further enables
4 the first storage system to assume an identity of the second storage system.

1 42. (Currently Amended) A method, comprising:
2 providing an interface that to define a plurality of failover modes in a clustered
3 storage system wherein the cluster storage system includes a plurality of servers
4 wherein each failover mode automatically configures one or more ports on
5 a selected storage system or a partner storage system in response to a failover
6 condition, and
7 wherein the partner storage system is configured to receive requests di-
8 rected to the partner storage system and the selected storage system, each failover
9 mode further configuring the partner storage system with a world wide node name
10 and a world wide port name from the selected storage system to allow the partner
11 storage system to assume the identity of the selected storage system;
12 selecting a command set supported by the interface to set a cluster mode for the
13 clustered storage system, the command set including a first command and a second com-
14 mand,
15 the first command configured to permit the user to specify a specific initia-
16 tor group (igroup) to utilize one or more ports for data access proxying in the

17 clustered storage system wherein the igroup is a logical named entity assigned to
18 one or more addresses that are associated with one or more initiators,
19 the second command configured the cluster mode defining one of a plural-
20 ity of failover modes in which a storage ~~systems~~ system is to operate,
21 wherein the command set further provides information specific to the
22 failover operations of the one or more ports to the user on the user interface sys-
23 tem, ~~and each failover mode automatically configures one or more ports on a se-~~
24 ~~lected storage system or a partner storage system in response to a failover condi-~~
25 ~~tion, the partner server is configured to receive requests directed to the partner~~
26 ~~server and the failed server; and~~
27 configuring the clustered storage system into the selected cluster mode.

1 43. (Previously Presented) The method of claim 42, wherein the interface is a command
2 line interface.

1 44. (Previously Presented) The method of claim 42, wherein the interface is a graphical
2 user interface.

1 45. (Previously Presented) The method of claim 42, wherein the selected cluster mode
2 enables the clustered storage system to proxy data access requests received by a first stor-
3 age system in the clustered storage system to a second storage system in the clustered
4 storage system.

1 46. (Previously Presented) The method of claim 42, wherein the selected cluster mode
2 enables a first storage system in the clustered storage system to assume an identity of a
3 second storage system in the clustered storage system.

1 47. (Previously Presented) The method of claim 42, wherein the cluster mode enables
2 proxying of data access requests received by a first storage system in the clustered stor-

age system to a second storage system in the clustered storage system and further enables the first storage system to assume an identity of the second storage system.

48. (Currently Amended) A system configured to simplify management of a clustered storage system having a plurality of failover modes, the system comprising:

an interface system that to define a plurality of failover modes in a clustered storage system automatically responding to a failover condition, wherein each failover mode configures one or more ports on a selected server or a partner server in response to a failover condition, ~~the partner server is configured to receive requests directed to the partner server and the selected server~~ each failover mode further configuring the partner storage system with a world wide node name and a world wide port name from the selected storage system to allow the partner storage system to assume the identity of the selected storage system; and

a command set implemented by the interface system, the command set including a first command and a second command,

the first command configured to permit the user to specify a specific initiator group (igroup) to utilize one or more ports for data access proxying in the clustered storage system wherein the igroup is a logical named entity assigned to one or more addresses that are associated with one or more initiators,

the second command configured ~~and including a command for setting to~~ set a cluster mode where the cluster mode includes one of the plurality of failover modes in which a storage ~~systems~~ system is to operate,

wherein the command set further provides information specific to the failover operations of the one or more ports to the user on the user interface system.

49. (Previously Presented) The system of claim 48, wherein the plurality of failure modes comprises a standby mode, a partner mode, a dual fabric mode, and a mixed mode.

1 50. – 58. (Cancelled)

Please add new claims 59 *et seq*:

1 59. (New) The system of claim 1 wherein the igroup allows a user to define related cli-
2 ents by a logical name.

1 60. (New) The system of claim 59 wherein the igroup is used by higher layer vdisk com-
2 mands to allow data access proxying to a partner storage system.

1 61. (New) The system of claim 1 wherein data access at a lun level is not affected by re-
2 organization of the initiators.

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2 62. (New) The system of claim 1 wherein data access proxying comprises receiving, at a
3 proxy port of a first storage system, a command to be forwarded to a second storage sys-
4 tem for execution.